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10/020,768	12/12/2001	Paul A. Geel	25151A	8672

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2790 COLUMBUS ROAD  
GRANVILLE, OH 43023

EXAMINER

BOYD, JENNIFER A

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/020,768

Applicant(s)

GEEL, PAUL A.

Examiner

Jennifer A Boyd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11 - 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11 - 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The Applicant's Amendments and Accompanying Remarks, filed November 20, 2003, have been entered and have been carefully considered. Claims 1, 4, 12, 15 and 17 are amended, claims 21 – 24 are added and claims 1 – 8 and 11 – 24 are pending. In view of Applicant's Amendments, the Examiner withdraws the 35 U.S.C. 112, 2<sup>nd</sup> paragraph rejection of claims 6 and 7 as set forth in paragraphs 1 – 4 of the previous Office Action dated June 17, 2003. In view of Applicant's Amendments, the Examiner withdraws the 35 U.S.C. 102(b) rejection of claims 1 – 4, 6, 8, 11 – 12 and 15 – 16 as set forth in paragraph 2 of the previous Office Action. In view of Applicant's Amendments, the Examiner withdraws the 35 U.S.C. 102(b)/103(a) rejection of claims 5 and 7 as set forth paragraphs 3 and 4 of the previous Office Action. However, after an updated search, additional art has been found that renders the invention as currently claimed unpatentable.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 112***

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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The Applicant has amended claim 1 to require that the “combined total of polyvinyl alcohol and secondary binder in said reinforcing mat is greater than 50% by weight”. The newly added limitation is considered to be new matter because there is no support for the amendment in the Specification.

***Claim Rejections - 35 USC § 103***

4. Claims 1 – 8, 11, 13 - 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445).

Heidweiller is directed to composite glass fiber webs.

As to claim 1, Heidweiller teaches a web comprising glass fibers and polyester fibers (Abstract). In Example II, the polyester fibers are polyethylene glycol terephthalate fibers (also known as polyethylene terephthalate fibers) (column 4, lines 1 – 5). The weight ratio between the glass fibers and the organic fibers, such as the polyethylene terephthalate fibers, ranges from 10:1 to 1:1 (Abstract). Thus, the glass fibers are present in a proportion of 50 - 100% and the polyethylene terephthalate fibers are present in a proportion of 10 – 50%. The web also comprises a binder (Abstract). The binder can be selected from a great variety of materials including polyvinyl alcohol (column 2, lines 50 – 70). The polyvinyl alcohol binder of Heidweiller is equated to the Applicant’s “polyvinyl alcohol” and “secondary binder”. The proportion of the binder is preferably 5 – 50 percent, calculated on the total weight of the web (Abstract).

As to claim 2, Heidweiller teaches that the glass fibers can be C-glass fibers or preferably E-glass fibers (column 1, lines 57 – 70).

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As to claim 3, Heidweiller teaches that the E-glass fibers have a diameter of 4 – 15 microns (column 1, lines 60 – 65). In Example 1, the E-glass fibers have a length of 10mm (column 3, lines 20 – 25).

As to claim 4, Heidweiller teaches that the polyethylene terephthalate fibers have a length of 6 mm (column 4, lines 1 – 5).

As to claim 8, Heidweiller teaches that the binder can be in the form of fibers or water-dispersible granules (column 3, lines 1 – 5).

As to claim 11, Heidweiller teaches that the binder can be in the form of water dispersible granules, therefore, it could be a water-based emulsion or a solution-type binder.

As to claim 21, Heidweiller teaches a polyvinyl alcohol binder. As mentioned in the above paragraphs, the Examiner has equated to the binder to the “secondary binder” along with the polyvinyl alcohol.

As to claims 5 and 7, although Heidweiller does not explicitly teach the claimed properties that the polyethylene terephthalate fibers have a melting point above about 250 degrees Celsius as required by claim 5 and polyethylene terephthalate fibers do not melt below 220 degrees Celsius as required by claim 7, it is reasonable to presume that the polyethylene terephthalate fibers have a melting point above about 250 degrees Celsius as required by claim 5 and polyethylene terephthalate fibers do not melt below 220 degrees Celsius as required by claim 7 is inherent to Heidweiller. Support for said presumption is found in the use of like materials (i.e. polyethylene terephthalate fibers having a diameter from about 6 to 16 microns) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have

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been present once the Heidweiller product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

As to claims 1, 4 and 13 - 18, Heidweiller discloses the claimed invention except for that the web has a combined total of polyvinyl alcohol and secondary binder greater than 50% by weight as required by claim 1, the polyethylene terephthalate fibers have a diameter of from about 6 to 12 microns as required by claim 4, the glass fibers are present in the amount of 25 to 40 % by weight of the fibers as required by claim 13, the polyethylene terephthalate fibers are present in the amount of 60 – 75% by weight of the fiber as required by claim 14, the polyvinyl alcohol is present in the amount of 16 to about 20% by the total weight of the glass fibers and the polyethylene terephthalate fibers as required by claim 15, the secondary binder is provided in an amount of about 15 to 25% of the total weight of the base web as required by claim 16, the base web comprises glass fibers in the amount of 25 to about 40 percent by weight, polyethylene terephthalate fibers in the amount of 60 to about 75 % by weight and the polyvinyl alcohol in an amount of about 16 to about 20% by total weight of the glass fibers and the polyethylene terephthalate fibers as required by claim 17, the secondary binder is present in the amount of about 15 to about 25 of the total weight of the base web as required by claim 18. It should be noted that the combined total of polyvinyl alcohol and secondary binder in the web is a result effective variable. As the amount of the binder increases, the mat increases in strength and dimensional stability. As the amount of glass fibers increase, the compressive strength increases. As the amount of polyethylene terephthalate fibers increase, the tear strength increases. As the polyethylene terephthalate fiber diameter increases, the fiber becomes stronger and as the diameter decreases, the fiber becomes more pliable and softer to the touch. It would have been

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obvious to one having ordinary skill in the art at the time the invention was made to create a web with a combined total of polyvinyl alcohol and secondary binder greater than 50% by weight as required by claim 1, the polyethylene terephthalate fibers have a diameter of from about 6 to 12 microns as required by claim 4, the glass fibers are present in the amount of 25 to 40 % by weight of the fibers as required by claim 13, the polyethylene terephthalate fibers are present in the amount of 60 – 75% by weight of the fiber as required by claim 14, the polyvinyl alcohol is present in the amount of 16 to about 20% by the total weight of the glass fibers and the polyethylene terephthalate fibers as required by claim 15, the secondary binder is provided in an amount of about 15 to 25% of the total weight of the base web as required by claim 16, the base web comprises glass fibers in the amount of 25 to about 40 percent by weight, polyethylene terephthalate fibers in the amount of 60 to about 75 % by weight and the polyvinyl alcohol in an amount of about 16 to about 20% by total weight of the glass fibers and the polyethylene terephthalate fibers as required by claim 17, the secondary binder is present in the amount of about 15 to about 25 of the total weight of the base web as required by claim 18, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of polyvinyl alcohol, secondary binder, glass fibers and polyethylene terephthalate fibers to create a pliable, strong, highly dimensionally stable web with high tear and compressive strength.

5. Claims 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445) in view of Helwig et al. (US 6,267,843).

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Heidweiller teaches a web comprising glass fibers and polyester fibers (Abstract). In Example II, the polyester fibers are polyethylene glycol terephthalate fibers (also known as polyethylene terephthalate fibers) (column 4, lines 1 – 5). The weight ratio between the glass fibers and the organic fibers, such as the polyethylene terephthalate fibers, ranges from 10:1 to 1:1 (Abstract). Thus, the glass fibers are present in a proportion of 50 - 100% and the polyethylene terephthalate fibers are present in a proportion of 10 – 50%. The web also comprises a binder (Abstract). The binder can be selected from a great variety of materials including polyvinyl alcohol (column 2, lines 50 – 70). The polyvinyl alcohol binder of Heidweiller is equated to the Applicant's "polyvinyl alcohol" and "secondary binder".

Heidweiller fails to disclose that the polyvinyl alcohol binder in fiber form has a diameter of from about 6 to 16 microns and a length from 4 to about 25 mm.

Helwig et al. teaches a wet-laid nonwoven mat comprising glass fibers, polymeric binder fibers and/or powder and optionally polyvinyl alcohol (column 1, lines 55 – 63). The polyvinyl alcohol binder fiber can be type VPB101 from Kuraray Co (column 5, lines 5 – 15). According to Yamamoto et al. (US 4,483,976), Kuraray VPB101 has a denier of 1.3 and length of 4mm (column 5, lines 58 – 63). Assuming a density of  $1.26 \text{ g/cm}^3$  as stated in *Polymers – A Property Database*, the fiber diameter is 12 microns.

It would have been obvious and necessary for one of ordinary skill in the art practicing the invention of Heidweiller to provide the details of the polyvinyl alcohol binder in fiber form. As the size and length of the binder fibers determine the strength of the bound web fibers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use binder fibers with a length of 4 mm and a fiber diameter of 12 microns as suggested by

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Helwig in the invention of Heidweiller motivated by the expectation of successfully practicing the invention of Heidweiller.

As to claim 23, Heidweiller in view of Helwig discloses the claimed invention except for that the polyvinyl alcohol fiber has a diameter of between about 6 and 11 microns. It should be noted that the diameter of the polyvinyl alcohol fiber is a result effective variable. As the diameter increases, the fiber becomes stronger and as the diameter decreases, the fiber becomes more pliable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create a polyvinyl alcohol fiber with a diameter of between about 6 and 11 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to create a polyvinyl alcohol fiber with a diameter between 6 and 11 microns in order to have a strong and pliable fiber.

6. Claims 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445) in view of Kinsley, Jr. (US 5,800,675).

Heidweiller teaches a web comprising glass fibers and polyester fibers (Abstract). In Example II, the polyester fibers are polyethylene glycol terephthalate fibers (also known as polyethylene terephthalate fibers) (column 4, lines 1 – 5). The weight ratio between the glass fibers and the organic fibers, such as the polyethylene terephthalate fibers, ranges from 10:1 to 1:1 (Abstract). Thus, the glass fibers are present in a proportion of 50 - 100% and the polyethylene terephthalate fibers are present in a proportion of 10 – 50%. The web also

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comprises a binder (Abstract). The binder can be selected from a great variety of materials including polyvinyl alcohol (column 2, lines 50 – 70). The polyvinyl alcohol binder of Heidweiller is equated to the Applicant's "polyvinyl alcohol" and "secondary binder". The proportion of the binder is preferably 5 – 50 percent, calculated on the total weight of the web (Abstract).

Heidweiller fails to disclose that the polyvinyl alcohol binder in powder form has a particle size from about 50 to 250 microns.

Kinsley, Jr. teaches a paper-based product comprising a particulate binder (Abstract). The preferred binder is a polyvinyl alcohol powder (Abstract). The binder has a dry size diameter of 88 – 220 microns and a swollen size diameter of 176 – 440 microns.

It would have been obvious and necessary for one of ordinary skill in the art practicing the invention of Heidweiller to provide the details of the polyvinyl alcohol binder in powder form. As the size of the binder particles determine the strength of the bound web fibers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a binder with a dry size diameter of 88 – 220 microns as suggested by Kinsley, Jr. in the invention of Heidweiller motivated by the expectation of successfully practicing the invention of Heidweiller.

7. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helwig et al. (US 5,935,879).

Helwig is directed to a non-woven fiber mat suitable for reinforcing resilient sheet floor coverings, such as vinyl floor coverings (Abstract).

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As to claim 1, Helwig teaches a non-woven wet-laid mat (column 2, lines 35 – 40) comprising reinforcement fibers including glass fibers and synthetic fibers (column 2, lines 35 – 50). Helwig teaches that the synthetic fiber can comprise polyester (column 2, lines 45 – 50), or specifically, polyethylene terephthalate (Example 5, lines 60 – 68). Helwig teaches that one or more binders may be used to binder the reinforcement fibers (column 2, lines 53 – 55). Helwig teaches that the binders can be in particle form such as polyvinyl alcohol powder and fiber form such as vinyl chloride copolymer or a combination of both (column 2, lines 59 – 65). Helwig teaches that the binder may include a preliminary binder to bind the reinforcement fibers together to enable the sheet to be subsequently processed into a fiber mat. The Examiner equates the polyvinyl alcohol powder to Applicant's "polyvinyl alcohol". The polymeric binder may also include a secondary binder to bond the reinforcement fibers to provide the fiber mat with substantial resistance to planar elongation and yet still allow a substantial degree of planar compressive movement (column 3, lines 45 – 55).

As to claim 6, Helwig teaches that the synthetic fibers can be aramid fibers (column 5, lines 16 – 21).

As to claim 1, Helwig discloses the claimed invention except for that the web has a combined total of polyvinyl alcohol and secondary binder greater than 50% by weight as required by claim 1. It should be noted that the combined total of polyvinyl alcohol and secondary binder in the web is a result effective variable. As the amount of the binder increases, the mat becomes higher in strength and has greater dimensional stability. It would have been obvious to one having ordinary skill in the art at the time the invention was made to the web with a combined total of polyvinyl alcohol and secondary binder greater than 50% by weight, since it

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has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of polyvinyl alcohol and secondary binder to create a web with high strength, dimensional stability and appropriate level of compressive strength.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helwig et al. (US 5,935,879) in view of Helwig et al. (US 6,365,001).

Helwig '879 teaches the claimed invention above except fails to disclose that the secondary binder can comprise acrylic, ethylene vinyl acetate or any mixtures thereof.

Helwig '001 is directed to a wet-laid nonwoven mat suitable for vinyl floor coverings (Abstract). Helwig '001 teaches a base mat formed from a mixture of glass fibers, polymeric binder fibers and/or powder with a treatment of a second water-based polymeric binder composition (Abstract). Helwig '001 teaches that the secondary binder provides additional strength and dimensional stability to the web during the initial stages of processing and is selected to provide the desired compressive behavior (column 3, lines 25 – 45). Helwig '001 teaches the use of a secondary binder such as a vinyl acetate ethylene copolymer (column 4, lines 30 – 40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use vinyl acetate ethylene copolymer as suggested by Helwig '001 as the secondary binder of Helwig '879 to create web with additional strength and dimensional stability during

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processing and possessing the desired level of compressive behavior which is crucial in floor covering applications.

*Response to Arguments*

9. Applicant's arguments filed October 10, 2003 have been fully considered but they are not persuasive.

In response to Applicant's Arguments regarding the rejection over Heidweiller (US 3,622,445), the Examiner respectfully argues the contrary. Although Heidweiller does not specifically teach the claimed ranges of weight percentage of the glass fibers, polyethylene terephthalate fibers, polyvinyl alcohol and secondary binder, it would have been obvious to optimize the ranges to create a nonwoven web with high strength, dimensional stability and compressive strength. If the claimed ranges have unexpected results, the burden is upon the Applicant to demonstrate that the claimed ranges are not a matter of simple optimization.

In response to Applicant's Arguments regarding the rejection over Heidweiller (US 3,622,445) in view of Helwig (US 6,267,843), the Examiner respectfully argues the contrary. Heidweiller and Helwig are both directed to wet-laid glass fiber webs with a polyvinyl alcohol binder use in high strength applications, therefore, Heidweiller and Helwig are considered to be in the same field of endeavor. Heidweiller teaches the claimed invention except fails to disclose *any* details about the polyvinyl alcohol binder. Therefore, it would have been obvious and *necessary* to refer to another reference in the same field of endeavor for the details of a polyvinyl alcohol binder.

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In response to Applicant's Arguments regarding the rejection over Heidweiller (US 3,622,445) in view of Kinsley, Jr. (US 5,800,675), the Examiner respectfully argues the contrary. Heidweiller and Helwig are both directed to wet-laid glass fiber webs with a polyvinyl alcohol binder for use in high strength applications, therefore, they are considered to be in the same field of endeavor. Heidweiller teaches the claimed invention except fails to disclose *any* details of the polyvinyl alcohol binder. Therefore, it would have been obvious and *necessary* for one of ordinary skill in the art practicing the invention of Heidweiller to provide the details of the polyvinyl alcohol binder.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-0994.

  
Jennifer Boyd  
January 19, 2004

  
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